2. **Pre-Tensioning Steel.** . . . . . AASHTO M-203

836.04 DOWEL BARS AND TIE BARS FOR PAVEMENT JOINTS.

Dowel bar for transverse expansion or contraction joints in Portland Cement Concrete pavement shall be plain, round bars fabricated from steel meeting AASHTO M-31, M-42, or M-53.

Dowels shall be saw cut to the required length and cleaned to remove all cutting burrs, loose mill scale, rust, grease, and oil. The bars may be sheared providing the deformation of the bars from true round shape does not exceed 0.04 inch in diameter or thickness, and shall not extend more than 0.04 inch from the sheared end.

The free end of dowels for expansion joints shall be fitted with a metal sleeve of an approved design covering 2 inches ± one inch of the dowel. The sleeve shall have a closed end and a stop to hold the closed end at least one inch from the end of the dowel bar. The sleeve shall not collapse or distort in shape in handling and placing of the dowels and concrete.

All dowels shall be Epoxy coated in accordance with AASHTO M 284/M 284M-95. Freshly exposed steel as a result of shearing, saw-cutting, or cutting by other means during the fabrication process is acceptable on the ends of tie or dowel bars used in pavement joints.

Tie bars for the centerline joint in Portland Cement Concrete pavement shall be epoxy coated, meeting the requirements in 836.02 B. Other tie bars not used for the centerline joint shall meet AASHTO M-31, Grade 40 deformed.

SECTION 840
PILING

840.01 STEEL PILING.

A. **Steel H-Piling and Special Sections.** Materials for steel piling and special sections shall meet AASHTO 270 Grade 36.

B. **Shells for Steel Encased Concrete Piling.** Shells for steel encased concrete piling may be either cylindrical pipe or tapered fluted.

Cylindrical pipe shells shall be electric welded steel pipe or seamless steel pipe and shall meet ASTM A-252, Grade 2. End closure plates shall be 3/4-inch flat steel plate welded directly to the pipe and shall not project beyond the perimeter of the pile.

840.02 TIMBER PILING.

A. **Requirements.** All Timber Piling shall be clean-peeled and meet ASTM D-25.

B. **Dimensions.** Piles shall have the following minimum diameters:

	Diameter (Inches)	
Length of Piles	**3 Feet from Butt**	**At Tip**
Under 40 feet	12	8
40 – 74 feet	13	7
75 – 90 feet	13	6
Over 90 feet	As shown on the plans	

C. **Treatment.** Where required, treatment of timber piling shall be according to Section 846 and will be accepted on certification according to Section 801.01. This certificate shall include species of timber, type of preservative, and method of treatment.

840.03 SHEET PILING FOR PERMANENT INSTALLATION.

A. **Steel Sheet Piling.** This material shall meet AASHTO M-202.

B. **Corrugated Steel Sheet Piles**. The steel sheet piles shall be of the continuous interlock type and of the lengths and section modulus specified. The sheeting shall be new and the base metal shall be open hearth steel.

The interlock shall be formed by bending the metal through 180° or more, leaving an opening of sufficient size to allow free slippage of the adjoining sheet pile, but maintaining a reasonably snug fit.

Each sheet pile shall be true, straight, and uniform in section. Corner sections shall be of the same section modulus and metal as the regular sections.

When required, galvanizing shall meet ASTM A-525 Coating Designation G-210.

SECTION 844
STRUCTURAL TIMBER, LUMBER, AND HARDWARE

844.01 STRUCTURAL TIMBER AND LUMBER.

This material shall meet AASHTO M-168.

844.02 HARDWARE.

A. **Timber Connectors.** The dimensions and types of all connectors shall be shown in the Contract. The materials for connectors shall be as follows:

1. Split Ring, Tooth Ring, and Shear Plate Connectors shall meet ASTM A-711.